



# Radiation Systems, Inc.

Models 920CS and 920KS

SatCom Technologies Division

## 9.2-Meter Satellite Earth Station Antenna

### Features

- Qualified for 2° satellite spacing
- Meets FCC requirements for video uplinks
- Complete arc coverage in less than one minute with high speed motorized option
- Programmable control system
- Protection and maintenance of LNA's afforded by extra large hub
- Stiff, rugged mount for accurate pointing

### Description

The Model 920CS (C-Band) and 920KS (Ku-Band) antennas are designed for high performance video, message and data communications. These antennas meet the new FCC requirements for 2° satellite spacing.

Superior RF performance is achieved through the use of precision AccuShape®<sup>1</sup> reflector panels and dual shaped Cassegrain optics. Both C-Band and Ku-Band feeds employ corrugated horns to ensure high cross-polarization isolation levels. The Ku-band feed includes a blower that forces air across the feed window to prevent the accumulation of moisture.

Twenty-four high strength aluminum panels provide the durability needed to withstand rough handling and a wide range of environmental conditions. The panels are mounted to radial members which attach to a central hub. The hub also provides a weather-tight enclosure for protection of low noise amplifiers.

The hot-dipped galvanized steel mount employs a straightforward elevation-over-azimuth geometry to allow easy pointing to any visible satellite within the orbital arc. A margin of safety has been built into the design to ensure antenna support under adverse environmental conditions. The mount's stiff, rugged construction provides the pointing accuracy needed for proper operation under wind loading.

With the optional motorized drives, the antenna can be rapidly repositioned to different satellites in a continuous 110° azimuth arc. Several drive speed options are available.

The optional Series 4000 microprocessor-based programmable control system is capable of positioning the antenna to within .02" accuracy. In the manual mode, it allows an operator to run each axis while monitoring the position on a video terminal. In the automatic mode, it can store up to 40 satellite positions and automatically direct the antenna to any position according to a pre-programmed schedule. Options are available for program track and for controlling other earth station components. See the Series 4000 data sheet for more information.

<sup>1</sup>AccuShape® is a precision metal contouring process proprietary to Radiation Systems, Inc.



### Options

- Motorized drives with programmable 3-axis (elevation, azimuth, polarization) controller.
- 180° azimuth travel in two 90° sectors.
- 145° azimuth travel in overlapping 110° and 90° sectors.
- Deicing systems.

- Feeds with the following polarizations:

Receive Only	Receive/Transmit
Single linear	Orthogonal linear
Dual linear	Circular
Dual circular	Coplanar linear
	3-port linear frequency reuse
	4-port frequency reuse (linear or circular)

- Work platform and ladder
- Lightning arrestors
- Hub fans, light and duplex AC outlet

## Electrical

	C-Band Model 920CS		Ku-Band Model 920KS		
	Receive	Transmit	Receive <sup>1</sup>	Receive <sup>1</sup>	Transmit
Frequency	3.7-4.2GHz	5.925-6.425GHz	10.95-11.2GHz	11.7-12.2GHz	14.0-14.5GHz
Gain (Midband)	50.1 dBi	53.6 dBi	58.5 dBi	59.2 dBi	60.2 dBi
VSWR	1.30:1	1.30:1	1.30:1	1.30:1	1.30:1
Beamwidth: - 3dB	0.52°	0.37°	0.20°	0.18°	0.15°
-15 dB	1.07°	0.77°	0.41°	0.38°	0.30°
First Sidelobe Level	-14 dB	-14 dB	-14 dB	-14 dB	-14 dB
Radiation Pattern <sup>2</sup>	Meets current FCC and Intelsat specifications		Meets current FCC, Intelsat, and Eutelsat specifications		
Antenna Noise Temperature (ref. omt port), Typical <sup>3</sup>					
Elevation: 10°	34°K		50°K	50°K	
20°	24°K		40°K	40°K	
30°	19°K		37°K	37°K	
Power Handling Capability		5kW CW			2kW CW
Cross-Pol Isolation: On-Axis	35 dB	35 dB	35 dB	35 dB	35 dB
Off-Axis	30 dB	30 dB	30 dB	30 dB	30 dB
Feed Port Isolation: RX/RX	35 dB			35 dB	
TX/RX		35 dB		35 dB	

<sup>1</sup>Choose one receive band. Other bands and special wideband feeds are available.

<sup>2</sup>Radiation distribution envelopes are available upon request.

<sup>3</sup>For single linear receive port. Check factory for other polarizations.

## Mechanical

Antenna Diameter	9.2 Meters	Antenna Travel Rate (Motorized Options)	
Antenna Type	Cassegrain	Azimuth	
Reflector Construction	24 panels, AccuShape®	Standard Speed	0.5°/sec.
Mount Type	Elevation-over-azimuth	High Speed	2°/sec.
		Low Speed	0.01°/sec.
Antenna Travel		Elevation	
Elevation	5° to 90°	Standard Speed	0.5°/sec.
Azimuth	110° continuous - standard	High Speed	1°/sec.
	180° in two sectors - optional	Low Speed	0.01°/sec.
	145° in overlapping 110° and 90° sectors - optional	Polarization	
Polarization Adjustment		Standard Speed	2°/sec.
Manual	360°	Low Speed	0.2°/sec.
Motorized	±90°	Feed Interface	
Hub Equipment		Receive	Model 920CS
Enclosure		Transmit	CPR229G
Dimensions (Inside)	45" dia. x 56" long	Weight	CPR137G
		Net	Model 920KS
		Shipping	WR75
		Shipping Volume	WR75
			10,000 lbs.
			12,000 lbs.
			1200 ft. <sup>3</sup>
			1200 ft. <sup>3</sup>

## Environmental

Wind Loading at 32°F	Operational: 45 mph gusting to 65 mph
	Survival: 125 mph, no ice — 87 mph with 1" radial ice
Pointing Accuracy	Model 920CS
30 mph wind gusting to 45 mph	Model 920KS
45 mph wind gusting to 65 mph	.032°rms
	.030°rms
Temperature Range	.060°rms
Operational or Survival <sup>1</sup>	-40°F to 125°F Manual Drives
	-20°F to 125°F Motorized Drives
	-40°F to 125°F Motorized Drives (optional)
Atmospheric Conditions	Salt, pollutants and corrosive contaminants as found in coastal and industrial areas.

<sup>1</sup>Survival conditions for wind and temperature considered separately.

All specifications are subject to change without notice.

©1/88

## Radiation Systems, Inc.

1501 Moran Road, Sterling, Virginia 22170 • Telephone (703) 450-5680

DIVISIONS: ELECTROMECHANICAL SYSTEMS (813) 541-8681 • MARK ANTENNAS (312) 298-9420 • SATCOM TECHNOLOGIES (404) 497-8800  
TECHNICAL PRODUCTS (703) 450-5680 • UNIVERSAL ANTENNAS (214) 690-8865